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(54) Title: PROTECTIVE COATING

(57) Abstract: Mixtures and methods to be used for making a self-leveled coating and enable the use of colored particles integrated within transparent resin in full dispersion, which includes a transparent resin, thermosetting and/or thermoplastic particles and tiny colored ATH particles. The coating may be implemented by pouring and spreading the mixture on a horizontal surface or by extrusion; the thermosetting and/or thermoplastic particles can be distinct in color and size when observed by a naked eye; the tiny colored ATH particles can be dehydrated and re-hydrated with a colored liquid; in addition, different materials and processes can be used.

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Protective coating

Technical Field

This invention relates to coatings, and more particularly to resin-based coatings with particles therein.

Background Art

The present application claims priority from the patent application No. 167343, filed by the present applicants on 9 March 2005 in Israel, and entitled: Decorative protection for coating based on resin-granules.

Examples of prior art patents:

Beitelshees et al., US Patent No. 6,773,643, continuous method for formation of three dimensional burls in a solid surface material.

Kelly., US Patent No. 6,861,090, surface finish of cementitious natural and containing glass beads.

Kelly., US Patent No. 6,692,566, surface finish of cementitious natural and containing glass beads.

Shaw et al., US Patent No. 6,016,635, surface seeded aggregate and method of forming the same.

Phillips, Sr., US Patent No. 5,441,677, method of making high gloss, hardened concrete floors.

Sakai et al., US Patent No. 6,309,562, artificial stone.

Sakai., US Patent No. 6,146,548, noctilucent or fluorescent artificial stone.

Toshiba ceramics co., Japan Patent No. 2255552, artificial stone.

Shortland et al., US Patent No. 6,579,610, non stain flooring.

Buser et al., US Patent No. 4,159,301, simulated granite and its preparation.

Krieg et al., US Patent No. 5,690,872, method for the production of highly filled polymethyl methacrylate based plastics.

Buser et al., US Patent No. 4,085,246, simulated granite and its preparation.

Ghahary., US Patent No. 5,688,602, method for producing laminated articles.

Rochette., US Patent application No. 2005/0055931, stones-like laminates.

Ghahary., US Patent No. 5,504,126, mineral-like coating methods of using same.

Ghahary., US Patent No. 5,476,895, granite-like coating.

Novak., US Patent No. 5,588,599, method of manufacture of polyester-chip products for casting artificial-stone articles.

Ghahary., US Patent No. 5,465,544, decorative facings for bricks, cinderblocks and the like.

Ghahary., US Patent No. 5,304,592, mineral-like plastics.

Iwase et al., US Patent No. 6,660,196, method for producing an injection molded product with a grained pattern.

Mukai et al., US Patent No. 6,306,321, method for producing artificial marble.

Beitelshees et al., US Patent No. 6,462,103, formation of three dimensional burls in a filled acrylic solid surface material.

Prior Art technology is disclosed, for example, in the following patents:

US 4,961,995

US 5,588,599

US 5,286,290

JP 6,055,703

It may be desirable to make an integral protective coating for surfaces, which includes resin, usually made up of two components, and colored particles of any kind. Usually, recycled glass particles are spread over the resin's surface prior to its hardening.

One of the problems with such coatings is the creation of scratches from sharp rigid objects, which may come in contact with the coating. The scratches appear since the coatings are based on resins, such as: epoxy, polyester or acrylic resins – which are not durable to scratches. In particular, there is a problem with scratches and the prevention of sliding in leveled coating surfaces, where the coating may be based on two components epoxy resins or other resins filled with colored particles of an arbitrary kind and of various sizes.

Although this filling looks decorative, it might not prevent surface wearing and the appearance of scratches.

Disclosure of Invention

This disclosure includes new formations and methods for spreading a transparent and/or colored glass, in one or more colors, over a surface, which is made of resin filled with one or more of the following:

Colored glass particles, Particles made of colored crushed minerals, Thermoplastic particles, Thermosetting particles.

Brief Description of Drawings

Fig. 1 details a block diagram for manufacturing glass particles by recycling glass waste.

Fig. 2 details a method for manufacturing particles using a thermosetting or thermoplastic material.

Fig. 3 details a method for manufacturing colored ATH particles

Fig. 4 details possible usage of different materials for making the particles

Fig. 5 details durability of resins against Bases and Solvents

Fig. 6 details a cross-section view of a solid surface.

Best Mode for Carrying Out the Invention

The present invention shall now be described by way of example and with reference to the accompanying drawings.

The invention makes use of alumina trihydrate (ATH powders) also known as alumina hydroxide.

The glass particles can be manufactured according to a method described in Fig. 1. In this method, it is possible to use Mixed Glass Waste 21 and/or Transparent Glass Waste 25 and/or Non-Transparent Glass Waste 31. In all of these cases, the glass waste can be crushed at start (steps 22, 26 and 32 respectively), to the size of 4-6 mm (Millimeters).

In all of these cases, the glass waste can be then burned in an oven. This may be useful for removing unnecessary materials. Thus, the glass waste is placed in an oven, preferably at a temperature of more than 400 degrees Celsius, and can be separated from other waste. In case a new glass is used, there is no need for this process.

It may be possible to initiate Oven Burning for removing Adhesive Labels 23, and/or Oven Burning for removing Stickers made of paper or nylon 27, and/or Oven Burning for removing Adhesive Labels 33.

According to the kind of glass waste, additional crushing can be implemented, to create flakes of a size of about 100 – 450 Microns, which can be separated using a vibrating sieve.

The 100 – 450 Microns particles can be washed for removing dust. Particles larger than 450 Microns can be further crushed, and particles smaller than 100 Microns can be processed for re-diversification and baking at temperatures of about 700-820 Celsius degrees, for additional recycling.

For diversification, it may be possible to use oxides combined with metals.

Flakes of a size of about 100 – 450 Microns may be dried.

In the embodiment of Fig. 1, it may be desired to initiate Crushing to the size of <200 μm 24, and/or Crushing to the size of 85-300 μm 28, and/or Crushing to the size of <200 μm 34.

Sorting 29 can be implemented for picking relevant particles. In this example, particles smaller than 85 Microns are picked 30.

Mixing with matching Pigments 35, can be implemented for some particles.

Oven baking 36 at 700-1050 Celsius degrees can be implemented for reasons described in this paper.

The resulting Clod can be crushed 37 for making particles the size of about 85-300 Microns.

Relevant particles can be Sorted 38, so that particles of the size of 85-300 Microns are picked. Particles smaller than 85 Microns are returned 39.

Washing 40 and/or Drying 41 and/or Mixing with resin matrix 42 can be implemented.

Pouring and spreading 43 over a horizontal surface is then possible. Spreading dry particles 44 over cast surface can be done afterwards.

The innovative issues presented and claimed in the present application include, among others:

1. A decorative and protective coating for a surface, comprising:

A. Spreading of a resin mixture which includes resin and solid particles of an arbitrary kind upon a surface. The particles are preferably distinct in color and size when observed by a naked eye;

B. Spreading of glass particles in one or more colors, upon the surface where the resin mixture was spread according to (A), which is exposed to

ambient air and prior to its hardening.

2. A decorative and protective coating for a surface comprising a mixture of resin and solid particles, which is spread and leveled upon a surface.

Preferably, there are glass particles in one or more colors at the upper section of the coating. In a preferred embodiment, both glass and non-glass particles are wrapped together, with resin being used as a bonding material.

3. A method for making a decorative integral coating for a surface, comprising:

A. preparing a coating mixture that includes resin and solid particles, wherein the particles are in one or more colors and made of an arbitrary material;

B. spreading of the coating mixture that includes particles in one or more colors, upon the surface;

C. spreading of glass particles in one or more colors, upon the coating mixture and prior to hardening of the coating mixture.

4. A method for making a decorative integral coating for a surface, comprising:

A. preparing a coating mixture that includes resin and solid particles.

Preferably, the particles are in one or more colors and are made of glass;

B. spreading of the coating mixture that includes glass particles in one or more colors, upon the surface;

C. spreading of glass particles in one or more colors, upon the coating mixture and prior to hardening of the coating mixture.

5. The method according to paragraph (3) above, wherein the spreading of the coating mixture is done using brushing, sprinkling or smearing with a wiper upon the surface.

6. The method according to paragraph (4) above, wherein the spreading of the coating mixture is done using brushing, sprinkling or smearing with a wiper upon the surface.

7. The method according to paragraph (3) above, wherein the spreading of the glass particles is done by sprinkling or manually.

8. The method according to paragraph (4) above, wherein the spreading of the glass particles is done by sprinkling or manually.

9. A method for manufacturing a protecting decorative integral layer for a coating surface, comprising the spreading of glass particles on a coating surface which is made of a mixture of resin and particles, prior to its hardening.

Fig. 2 details a method for manufacturing particles using a thermosetting material. Based on one or more methods described in this paper, it may be possible to make a self-leveled sealing coat system based on resin and particles.

Self-leveling may refer to mixtures spread in a uniform manner over a surface so that the width of the laminate created is about the same in all of the relevant areas of the surface.

It may be possible to use for the particles any one or more of the following materials, which are also detailed in Fig. 4:

Colored Alumina, Phenol, Urea, Melamine, Unsaturated polyester, Unsaturated polyester with Phenol, Urea, Melamine, Two-component Epoxy and polyurethane.

Thermoplastic particles may be used with density of 1.1 – 1.2 Gram/Cm³, it is preferred they will be durable to solvents.

The step of Stamping powder 60 can be used as a possible source, followed by the steps of using heated cast 61, Roller stamping 62 and replacing clod 63, may be implemented.

It may be possible to use $<85\text{ }\mu\text{m}$ particles 74, mixing with non-saturated polyester resin and pigment 75 and hardening 76.

It may be possible to use injecting powder 70, heated extruder 71, heated cast 72 and replacing the clod 73.

It is possible to use the next stages on any one or more of the three outcomes of the three processes 63, 73 and 76.

Initial shredding 64 and optional Secondary shredding 65; then grinding to 100-1200 Microns 66, sieving with a vibrating sieve system 67, washing for removing dust 68 and mixing with colored particles ATH resin matrix 69.

Fig. 3 details a method for manufacturing colored ATH particles.

ATH Powder 50 with particles in the size of about 1-80 Microns, may be used in some methods, oven drying at temperature of about 280 Celsius degrees 51, cooking with paint solution and/or in water 52, diluted in colorant solution that is soluble in water, for about 10 minutes, may be implemented.

It is possible to dry the resulted powder 53, and then combine it 54 in a transparent resin matrix with thermosetting and/or thermoplastic particles.

The present disclosure describes solutions for several problems and/or difficulties found in common prior art, and enables the use of colored particles integrated within a transparent resin in full dispersion and auto-levering.

In a preferred method, gradual particles in levels of about 1.1 gram/cm^3 to about 2.4 gram/cm^3 are used in a gradual manner, so that the cross-section of the hardened system from its bottom to its top is continuous, without spaces of only transparent resin.

This formation is achieved by combining thermosetting and/or thermoplastic particles in sizes from about 80 microns with ATH powder particles in sizes of about 1 to 80 microns. The ATH powder was dehydrated and rehydrated with a solution having a colorant soluble in water, such as described in U.S.

5,286,290.

The colored alumina powder, or tiny particles of alum dehydrate and/or alum monohydrate which were sponged in a colored liquid, can have, among others, the following four functions and/or benefits in the self-levered and full-dispersion system:

1. The first function includes temporarily increasing the viscosity of the liquid resin mixture. Since the particles have small size and are lightweight (the ATH density is about 2.42 gram/cm^3) the rate at which they sink in the resin matrix is slowed down, in such a manner that the viscosity of the mixture is increased for the time period of the application using a serrated squeegee or injecting cast, such as often used in the art.

As the viscosity of the liquid resin mixture is increased, the rate at which particles having higher density than that of the resin, is slowed down. This enables packing the particles in an even manner in the transparent spaces, which have only transparent resin.

As the transparent spaces are bigger, the decorative texture of the floor's coating or the side in case it is a plastic item, is more harmed.

This phenomenon often occurs when using particles of the kind described in this disclosure. In addition, the novel innovative principle of the present method prevents the formation of an upper transparent laminate, which is solely made of transparent resin, which would be vulnerable to scratches and may thus harm the overall mineral texture of the surface, the floor or the laminated plastic.

Furthermore, this enables to successfully implement a method for decorative protection by using glass particles, as described in our patent for decorative protection for paving surfaces based on particles resin (Israeli Patent Application No.167343).

2. The second function of the colored alumina particles with the size of about 40-80 μm is to create a lower platform, which floats the colored particles of other kind above the platform and prevents their sinking to the bottom of the coating section, since their function at the upper section of the coating in the system is important.

This process is based on the fact that the density of the alumina powder particles is the biggest among the densities of the particles which are used in the system.

3. A third benefit derived from using tiny colored ATH particles is achieved due to the presence of colored ATH particles, which do not seal the transparent volume between the other particles and thus do not harm the mineral texture of the surface, which is achieved by the use of colored particles in the matrix, since it is known, according to the theory of chemistry, that the light diffraction coefficient of ATH filler, which belongs to the extenders family, is identical to that of resins. Thus, when colored ATH of tiny sizes is present within resin, it is appearing as semitransparent. Because creation of transparent spaces with no diversification, which are made of the transparent liquid resin, may harm the desired mineral texture, colored ATH can be used and may therefore solve this problem.

This, unlike prior art method using colored powders with particles smaller than 100 microns, which may cause the mineral texture to be sealed – since their light diffraction coefficient is bigger than that of resins, hence all of

the projected light would be returned making the texture look murky and unworthy.

Thus, by using a colored ATH powder, it is possible to distinguish by a naked eye the difference in colors and the distribution of the particles' sizes, which are present in the matrix as an addition to the transparent colored volume of the ATH particles, thus achieving a high quality mineral texture.

4. Using tiny ATH particles saves the need to use particles smaller than 300 microns, whose purpose in the mineral texture is to create a background diversification.

As a result of the abovementioned benefit, the cost of manufacturing the particles can be significantly reduced – this is because, as known in the art, as the grinding of particles results in smaller particles, then the level of wastage (particles smaller than 100 microns which are not used) is increased. Using the methods described in this paper, the wastage resulted in the grinding process may be very small, and thus may allow substantial product cost reduction.

Fig. 4 details a possible usage of different materials for making the particles (Table 1). Preferably, the polyester mentioned in Fig. 4 is enriched with hydrogen atoms. The particles are sieved in the mentioned units.

As a result of implementing the method mentioned hereinbefore, and because of the characteristics of ATH filler, an additional benefit of fire retarding may be achieved, thanks to the presence of trapped water within the ATH particles. This characteristic may be important in complying with technical demands for floor coatings.

Using colored alumina with particles in the sizes of 1-80 μm may dramatically reduce the system's price, since the use of shredded particles in the sizes of about 100-300 microns may not be required.

In addition, tiny colored alumina particles, in the sizes of 1-10 microns, can serve as nucleating agents in the plastic system for accelerating crystallization.

It is known in the theory of chemistry that amorphous fusion of crystalline resin becomes, when cooled, a solid made of tiny crystallites.

These crystallites, formed as a result of a physical process in which the polymeric chains are united, are responsive for transforming the amorphous mass to a crystal material.

The crystallization process varies for different resins and for various temperatures, each resin has different crystallization rate.

Accelerating the crystallization process can be necessary for making the production economical.

A resin, which is crystallized fast, can acquire mechanical strength at an early stage, its physical dimensions and final shape can be determined fast and eventually the product can be taken out of the mold sooner.

It is known in the industry to use materials such as chalk powder or kaolin powder, as accelerators. However, such materials may make transparent resins murky, this is unlike colored alumina particles – which are semitransparent and allow to clearly observe the particles in naked eye, which differ in color and size.

Fig. 6 details a cross-section view of one embodiment of a solid surface.

The lowest layer 85 can be made of colored alumina. In a preferred embodiment this layer's height is about 50 to 80 microns.

The second layer 84 from bottom may comprise a mixture of mostly Phenol and/or Urea and/or Melamine, in quantities such as about 70 percents.

About 15 percents of this layer may comprise colored ATH.

The approximately remaining 15 percents may comprise whatever managed to sink from a layer 83 above, such as pure polyester without filler.

Layer 83 above layer 84 can comprise, in a preferred embodiment, polyester and/or melamine and/or ATH and/or glass particles, combined altogether.

This layer includes particles, which stop and/or are slowly sinking.

Layer 81 on top may function as an anti-slip surface, with rough coating and/or protruding particles 82. This layer can be leveled because of surface tension. The particles 82 are protruding for increasing surface's friction. These particles may or may not partly sink to layer 83; they may be stopped because of the tiny particles within the surface.

In a preferred embodiment, it is possible to select a finish. Thus, it is possible, such as by polishing, to make a smoother finish of the surface.

In prior art, such as in US Patent No. 5,304,592 "mineral-like plastics", thermosetting particles and/or thermoplastic particles, in the sizes of about 140-1000 microns are combined with thermoplastic resin for making plastic mineral-like products.

Using such methods, in order to create a uniform texture full and uniform dispersion of the particles in the resin may be required.

The particles in the sizes of about 140-300 microns form a background color for particles larger than them.

The overall cost of producing thermosetting and/or thermoplastic particles in sizes of about 140-300 microns, can be very high. This would make such methods not economical, and furthermore for tiny thermoplastic particles, which may require using expensive means and these costs may make these methods not beneficial, since using particles in the sizes of $<100\text{ }\mu\text{m}$ might damage the mineral texture.

Barring certain methods for producing particles from thermoplastic particles known in prior art such as described in US Patent No. 5,588,599, the thermoplastic particles are made of P.B.T or PET, wherein the fusion temperature of these materials is about 260 Celsius degrees.

Using particles such as described in the last section is very limited, since the fusion temperature of the thermoplastic resin should be low in a scale of at least about 18 percents of the fusion temperature of the particles.

Hence, using these particles is limited to the fusion temperature of a thermoplastic material with fusion temperature of about up to 210 Celsius degrees. The number of thermoplastic resins having a fusion temperature lower than 210 Celsius degrees is very small. Thus, this method may be useful only with P.V.C since its fusion temperature is about 180-200 Celsius degrees.

In prior art, such as in US Patent No. 5,304,592 "mineral-like plastics" for example as described in column 5 line 26, a natural filler is used. This usage may be inefficient for giving colorful background to the texture.

This benefit, as well as a possibly lower cost than of using tiny particles from other material, make the combination of tiny colored ATH and particles of other kind in a thermoplastic resin system, much more economical.

In methods of using thermoplastic resins, adding tiny colored ATH particles in levels of about 1-100 microns, increases the viscosity of the fusion and prevents from other kinds of particles, with specific weight higher than that of the molten thermoplastic resin, to sink for a period of time.

As a result, the molten product comprised of thermoplastic resin and particles mentioned in this paper, can be injected into a mold. The rate in which the

molten product cools is bigger than the time it takes to heavy particles to sink, this creates a uniform laminated texture.

It may be possible to use a mixture described in this paper for the plastic or related industry using extrusion and/or injection. It may be possible to use extrusion and/or injection for manufacturing plastic products.

Using injection and/or extrusion crystallization may allow faster pulling of the product from its mold – by using ATH particles in the sizes of 1-10 microns.

Fig. 5 details the durability characteristics of resins against Bases and Solvents (Table 2).

In some embodiments and/or methods, it may be possible to use powdered transparent crystal quartz particles, in addition and/or instead of using glass particles.

Although using the preferably transparent powdered quartz particles might not produce the same decorative results, it still might give some savings in the glass burning process.

The rest of the methods and/or embodiment stages may remain the same.

It should be noted that the following is but limited number of examples, and that various possibilities, additions and modifications are possible for creating mineral textures and/or mixtures and/or surfaces and/or resins, upon reading what is written in this paper and based on what is described in this invention.

Industrial Applicability

This invention describes solutions for several problems and/or difficulties found in common prior art, and enables the use of colored particles integrated within transparent resin in full dispersion for auto-levering and extrusion.

In a preferred method, gradual particles in levels of about 1.1 gram/cm³ to about 2.4 gram/cm³ are used in a gradual manner, so that the cross-section of the hardened system from its bottom to its top is generally continuous, without spaces of only transparent resin. The formation can be achieved by combining thermosetting and/or thermoplastic particles in sizes from about 100 microns, with colored ATH powder particles in sizes of about 1 to 80 microns.

Claims

1. A method for making a decorative and protective coating for a surface, comprising:
 - A. Spreading of a resin mixture, which includes resin and solid particles of an arbitrary kind upon a surface, and wherein the particles are distinct in color and size when observed by a naked eye;
 - B. Spreading of glass particles in one or more colors, upon the surface where the resin mixture was spread according to (A), which is exposed to air and prior to its hardening.
2. A decorative and protective coating for a surface comprising a mixture of resin and solid particles, to be spread and leveled upon a surface, further including glass particles in one or more colors at the upper section of the coating, and wherein both glass and non-glass particles are wrapped with the resin which is used as a bonding material.
3. A method for making a decorative integral coating for a surface, comprising:
 - A. preparing a coating mixture that includes resin and solid particles, wherein the particles are in one or more colors and made of an arbitrary material;
 - B. spreading of the coating mixture that includes particles in one or more colors, upon the surface;
 - C. spreading of glass particles in one or more colors, upon the coating mixture and prior to a hardening of the coating mixture.

4. A method for making a decorative integral coating for a surface, comprising:
 - A. preparing a coating mixture that includes resin and solid particles, wherein the particles are in one or more colors and made of glass;
 - B. spreading of the coating mixture that includes glass particles in one or more colors, upon the surface;
 - C. spreading of glass particles in one or more colors, upon the coating mixture and prior to a hardening of the coating mixture.
5. The method of claim 3, wherein the spreading of the coating mixture is done using brushing, sprinkling or smearing with a wiper upon the surface.
6. The method of claim 4, wherein the spreading of the coating mixture is done using brushing, sprinkling or smearing with a wiper upon the surface.
7. The method of claim 3, wherein the spreading of the glass particles is done by sprinkling or manually.
8. The method of claim 4, wherein the spreading of the glass particles is done by sprinkling or manually.
9. A method for manufacturing a protecting decorative integral layer for a coating surface, comprising the spreading of glass particles on a coating surface which is made of a mixture of resin and particles, prior to its hardening.

10. A method for making self-leveled coating, comprising:
 - A. Preparing a mixture which comprises transparent resin and hardener, thermosetting particles which are distinct in color and size when observed by a naked eye, and tiny colored ATH or Alum Dehydrate or Alum Monohydrate particles;
 - B. Pouring and spreading the mixture on a horizontal surface.
11. The method for making self-leveled coating according to claim 10, wherein the tiny colored ATH particles were dehydrated and re-hydrated with a colored liquid.
12. A method for making self leveled coating according to claim 10 wherein the particles are thermoplastic material, and tiny colored ATH particles.
13. A mixture for making self-leveled coating, comprising:
 - A. A transparent resin and hardener;
 - B. Thermosetting particles with a diversification of one or more colors and wherein the particles are distinct in color and size when observed by a naked eye; and
 - C. Tiny colored ATH or Alum Dehydrate or Alum Monohydrate particles.
14. A mixture for making self leveled coating according to claim 13 wherein the particles are thermoplastic material, and tiny colored ATH or Alum Dehydrate or Alum Monohydrate particles.
15. The mixture of claim 13, wherein the tiny colored ATH particles were dehydrated and re-hydrated with a watery colored liquid.

16. A method for making self leveled coating according to claim 10 wherein the resin in step A is epoxy.
17. A method for making self leveled coating according to claim 10 wherein the resin in step A is polyurethane.
18. A mixture for making self leveled coating according to claim 13 wherein the resin in step A is epoxy.
19. A mixture for making self leveled coating according to claim 13 wherein the resin in step A is polyurethane.
20. A method for making self leveled coating according to claim 10 wherein the particles in step A are one or more of the following as particles: phenol, urea, melamine, unsaturated polyester, unsaturated polyester with phenol, urea, melamine and tiny colored ATH or Alum Dehydrate or Alum Monohydrate particles.
21. A mixture for making self leveled coating according to claim 13 wherein the particles in step B are one or more of the following as particles: phenol, urea, melamine, unsaturated polyester, unsaturated polyester with phenol, urea, melamine and tiny colored ATH or Alum Dehydrate or Alum Monohydrate particles.
22. A method for making a hardened polymeric resin in a mineral texture, comprising:
 - A. Preparing a mixture, which comprises polymeric resin, thermosetting particles, and tiny colored ATH particles;
 - B. Extruding or injecting the mixture for making a molded product.

23. The method for making a hardened polymer according to claim 22, wherein the thermosetting particles are distinct in color and size when observed by a naked eye.
24. The method for making a hardened polymer according to claim 22, wherein the tiny colored ATH particles were dehydrated and re-hydrated with a watery colored liquid.
25. A method for making a hardened polymeric resin according to claim 22 wherein the particles in step A are made of thermoplastic material and tiny colored ATH or Alum Dehydrate or Alum Monohydrate particles.
26. A mixture of materials for making a hardened polymeric resin with a mineral texture comprising:
- A. Polymeric resin of any kind;
 - B. Thermosetting particles; and
 - C. Tiny colored ATH or Alum Dehydrate or Alum Monohydrate particles.
27. The mixture of materials according to claim 26 wherein the particles in step B are distinct in color and size when observed by a naked eye.
28. The mixture of materials according to claim 26 wherein the tiny colored ATH particles were dehydrated and re-hydrated with a watery colored liquid.
29. The method for making a hardened polymer according to claim 22 or the mixture of materials for making a hardened polymer according to claim 26, wherein the usage is for the plastic industries.

31. A mixture of materials for making decorative anti scratch self leveled coating comprising:
- A. Resin, hardener, tiny colored ATH particles which were dehydrated and re-hydrated with a watery colored liquid, thermosetting particles distinct in color and size when observed by a naked eye;
 - B. Glass particles.
32. A mixture of materials according to claim 31 wherein particles in step A are made of thermoplastic material distinct in color and size when observed by a naked eye and tiny colored ATH particles which were dehydrated and re-hydrated with a watery colored liquid.
33. A mixture of materials according to claim 31 wherein particles in step B are made of transparent crystal quartz.
34. A method for making a self leveled anti scratch coating comprising:
- A. Preparing a coating mixture, which comprises transparent resin and hardener, thermosetting particles distinct in color and size when observed by a naked eye, tiny colored ATH particles which were dehydrated and re-hydrated with a watery colored liquid;
 - B. Spreading of the mixture in step A upon the surface;
 - C. Spreading dry glass particles where the coating mixture was spread according to (A) which is exposed to air and prior to its hardening.
35. A method for making a self leveled anti scratch coating according to claim 34 wherein the particles in step C are made of transparent crystal quartz.
36. A method for making a self leveled anti scratch coating according to claim 34 wherein the particles in step A are thermoplastic particles distinct in color and size when observed by a naked eye, tiny colored ATH particles which were dehydrated and re-hydrated with a watery colored liquid.

36. A method for making a self leveled anti scratch coating according to claim 34 wherein the particles in step A are thermoplastic particles distinct in color and size when observed by a naked eye, tiny colored ATH particles which were dehydrated and re-hydrated with a watery colored liquid.
37. A method for making hardened polymeric resin in a mineral texture comprising:
- A. Preparing a mixture, which comprises polymeric resin, hardener, thermosetting and thermoplastic particles distinct in color and size when observed by a naked eye and tiny colored ATH particles, which were dehydrated and re-hydrated with a watery colored liquid;
 - B. Spreading the coating mixture of step A upon a surface.
38. A mixture of materials for making a hardened polymeric resin with a mineral texture comprising:
- A. Polymeric resin, hardener;
 - B. Thermosetting and thermoplastic particles distinct in color and size when observed by a naked eye;
 - C. Tiny colored ATH or Alum Dehydrate or Alum Monohydrate particles.
39. A mixture of materials according to claim 38 wherein the tiny colored ATH particles were dehydrated and re-hydrated with a watery colored liquid.

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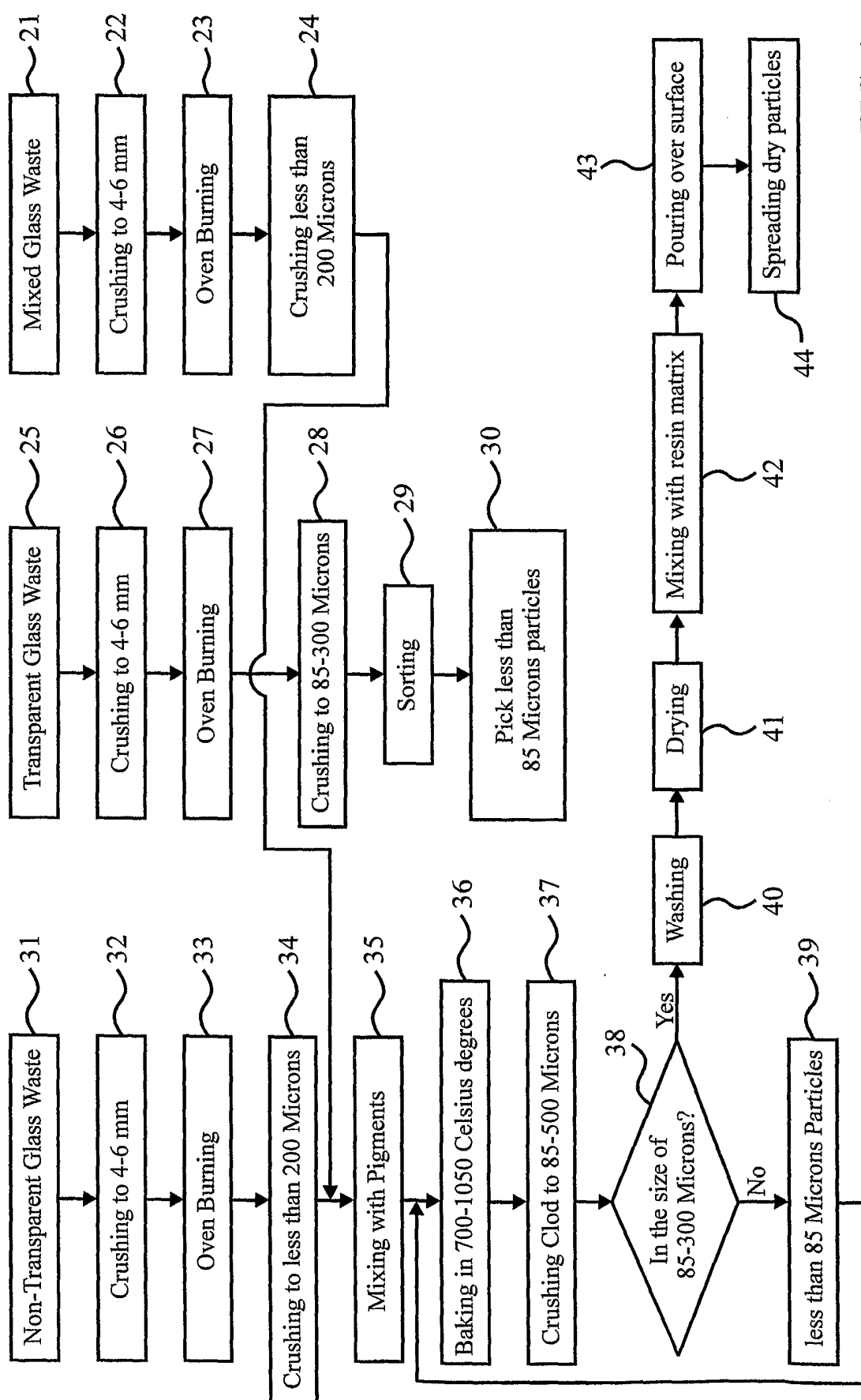


FIG. 1

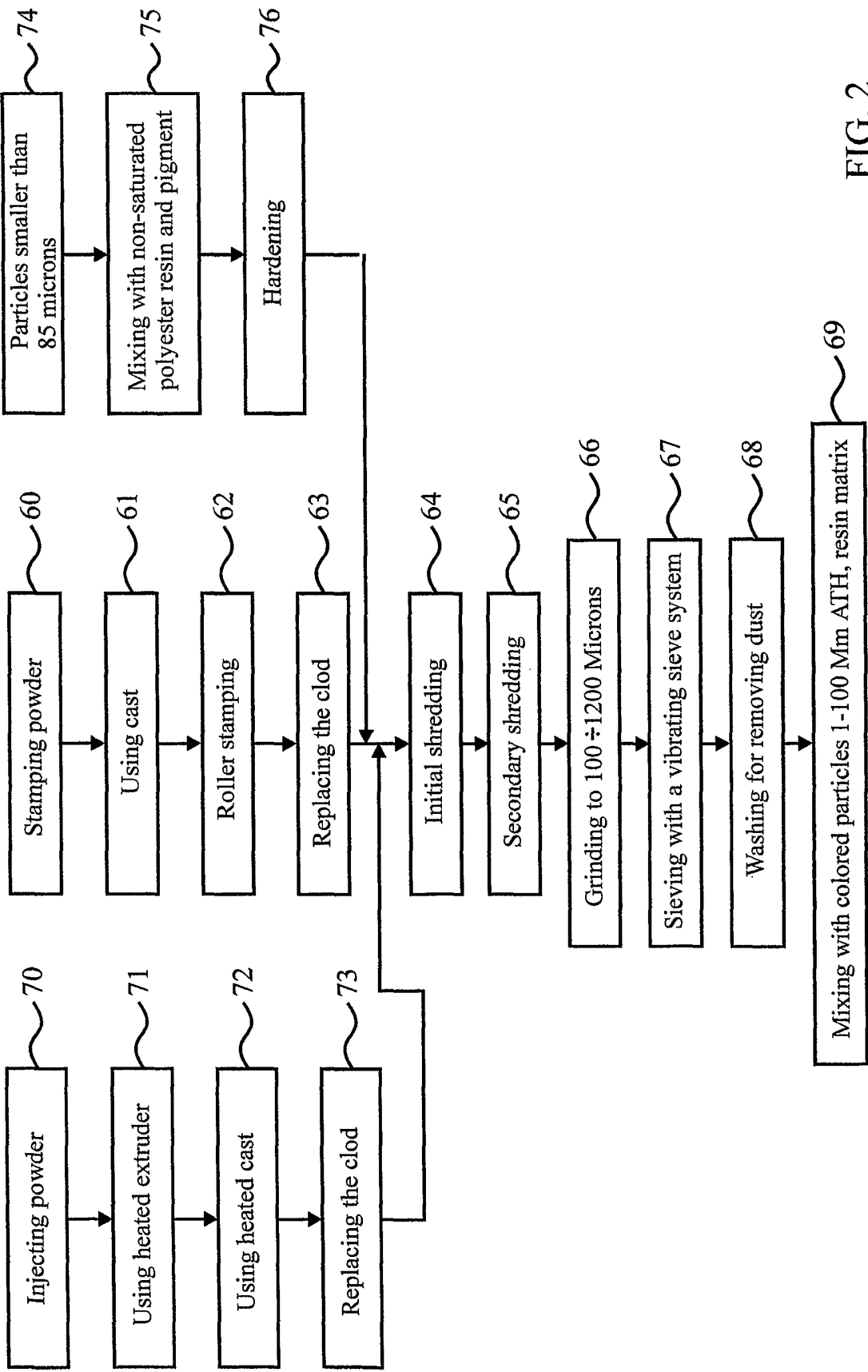


FIG. 2

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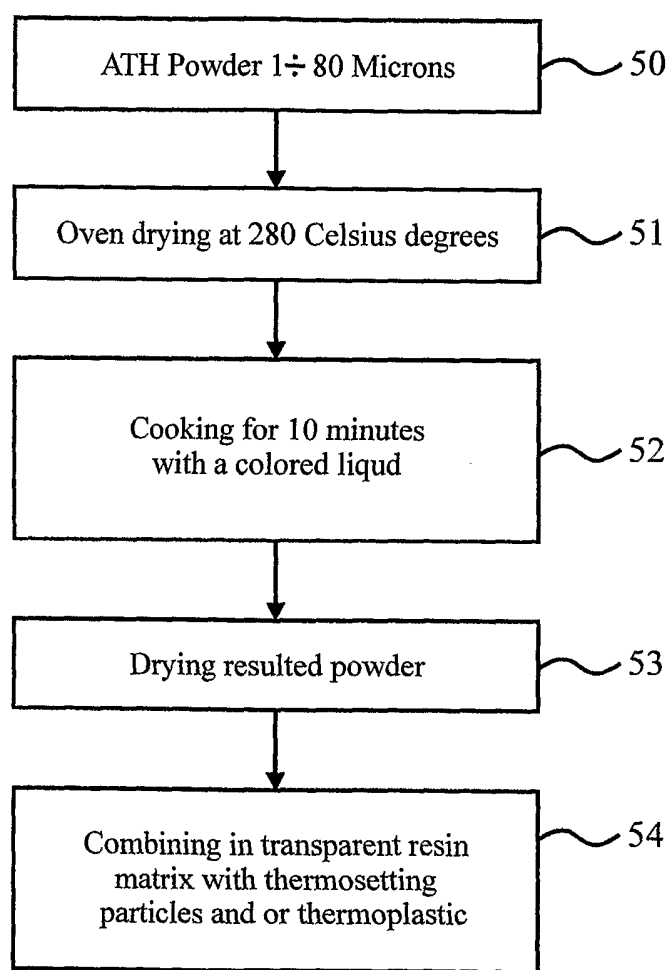


FIG. 3

Table 1

	Density [Gram/Cm ³]	Percent volume in the system	Distribution of particles sizes [Microns]
Colored Alumina	2.42	Up to 12% ÷ 14%	1-80
Phenol, Urea, Melamine	1.40	Up to 7% ÷ 9%	80-3000
Unsaturated polyester thermoplastic polymer	1.10 ÷ 1.20	Up to 7% ÷ 9%	80-3000
Unsaturated Polyester with Phenol, Urea, Melamine	1.23	Up to 3% ÷ 4%	80-3000
Two-component Epoxy	1.10	Up to 62% ÷ 67%	-----

FIG. 4

Table 2

	Benzene, Toluene and Xylene	Solvents, Oils/Fats	Chloroform, Methylene, Chlorates	MEK Acetone	
Thermoplastic PET	Average	Average	Poor	Poor	Poor
Epoxy	Excellent	Excellent	Good	Average	Good
Urea	Good	Good	Excellent	Good	Good

FIG. 5

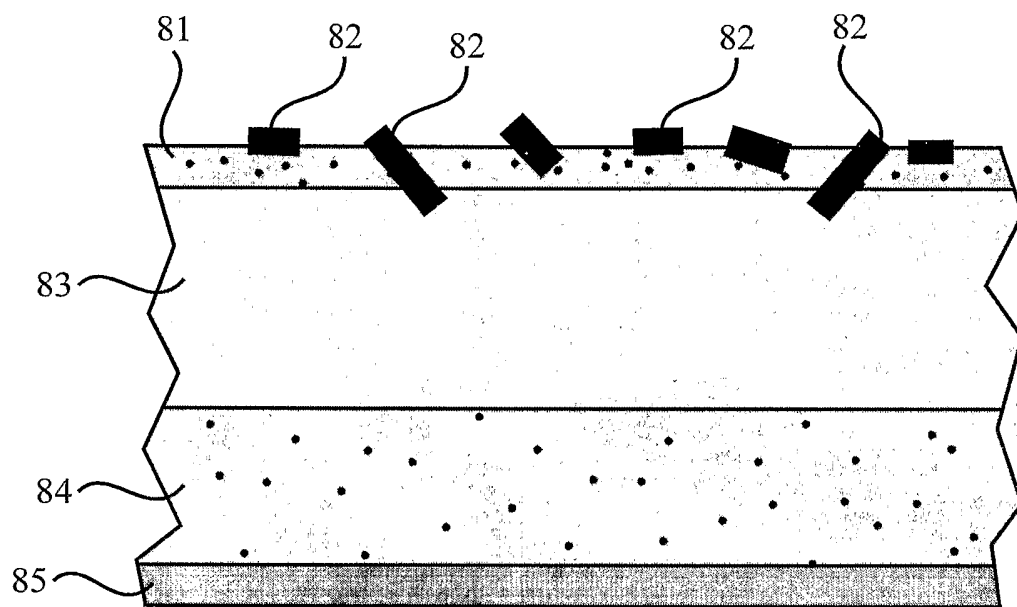


FIG. 6